

ST53™

THE MULTI-ROLE RESPIRATORY PROTECTION SYSTEM

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Technical Data

Breathing performance in SCBA mode	
Breathing rate	103 liters per minute with mask pressure above ambient
Environmental range	The operating range is -30°C to +60°C
End of cylinder air	Able to sustain positive pressure down to 10 bar cylinder pressure

Breathing performance in ST PAPR mode	
Breathing rate	125 - 165 liters per minute

Breathing performance in APR mode	
Breathing resistance	Exhalation breathing resistance of no greater than 20mm of water at 85 lpm in a negative pressure mode
Inhalation resistance including General Purpose Filter	50mm of water at 85 lpm

Live agent permeation performance (Data validated by ECBC, Edgewood Chemical Biological Center)						
	Requirements		Actual		Test agent	NIOSH CBRN requirements
Challenge chemical	Max Peak (mg/m³)	Max Cumulative (mg-min/m³)	Max Peak (mg/m³)	Max Cumulative (mg-min/m³)		Typical performance
Sarin (GB)	0.6	6	0.004	0.203	Mustard (HD)	6 Hours
Mustard (HD)	0.087	6	0.005	0.8	Sarin (GB)	>6 Hours

Materials used	
Harness on ST53 SCBA	Kevlar webbing with stainless steel and nylon hardware
Harness on ST53SD SCBA	Nylon Cordura
Backplate	Glass reinforced polycarbonate
Cylinder valve	Anodized Aluminum
ST-PAPR	GE Noryl with a 10% glass fill

Weight for ST53 units (based on empty cylinders)	
ST53 (excluding cylinder and mask)	6.6 lbs
Carbon fiber fully wrapped, 2216 psi, 30 minute	7.75 lbs
Carbon fiber fully wrapped, 4500 psi, 30 minute	7.4 lbs
Carbon fiber fully wrapped, 4500 psi, 45 minute	9.9 lbs
Carbon fiber fully wrapped, 4500 psi, 60 minute	11.95 lbs

Weight for ST53SD units (based on empty cylinders)	
ST53SD 11 cu.ft (includes cylinder but no mask)	5.2 lbs
ST53SD 17 cu.ft (includes cylinder but no mask)	4.0 lbs

Weight for ST-PAPR	
ST-PAPR without CDV, battery or cartridges	2.5 lbs
ST-PAPR with CDV, two general purpose filters and a lithium Sulphur Dioxide battery	4.4 lbs

Weight for mask only	
Single Port FM53 mask (excluding filter)	1.2 lbs
Dual Port FM53 mask (excluding filter)	1.3 lbs

The FM53 respirator falls within the definition of Significant Military Equipment in the United States Munitions List, International Traffic in Arms Regulations and may only be supplied outside of the United States of America to customers who are licensed by the US Department of State, Directorate of Defense Trade Controls.



Avon Protection Systems, Inc.
503 Eighth Street Cadillac, MI. 49601
1 888 AVON 440

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Avon's revolutionary ST53 multi-role Respiratory Protective Equipment (RPE) system has been developed specifically for specialist applications where the user needs to respond to changing operational conditions.

The ST53 product range evolved from the FM53 mask (see FM53 datasheet for further details). The FM53 mask has the unique capability to operate as a negative pressure filter mask or with positive pressure supplied air devices. The ST53 range of equipment has been developed to provide the user options to select the most suitable configuration for the application. A modular design approach is adopted enabling fast and simple equipment configuration across the ST53 range.

Option A

The FM53 mask with unique conformal filter for use as a negative pressure (APR) Air Purifying Mask.

Option C

The ST53 SCBA, a complete back frame mounted breathing apparatus with a range of cylinders to provide up to 60 minutes of operation.

Option B

The ST53SD SCBA, a short duration (up to 15 minute) positive pressure breathing apparatus.

Option D

The ST-PAPR, a powered air device that can be coupled with option B or C providing powered air capability when the SCBA is not in use or as a PAPR with option A only.

ST53™

The standard ST53 with full back frame offers 30, 45 and 60 minute lightweight carbon cylinder options

Cylinder Valve

The ST53 includes a nickel-plated brass cylinder valve with the option of locking and non-locking configurations.

Cylinder Content Monitoring

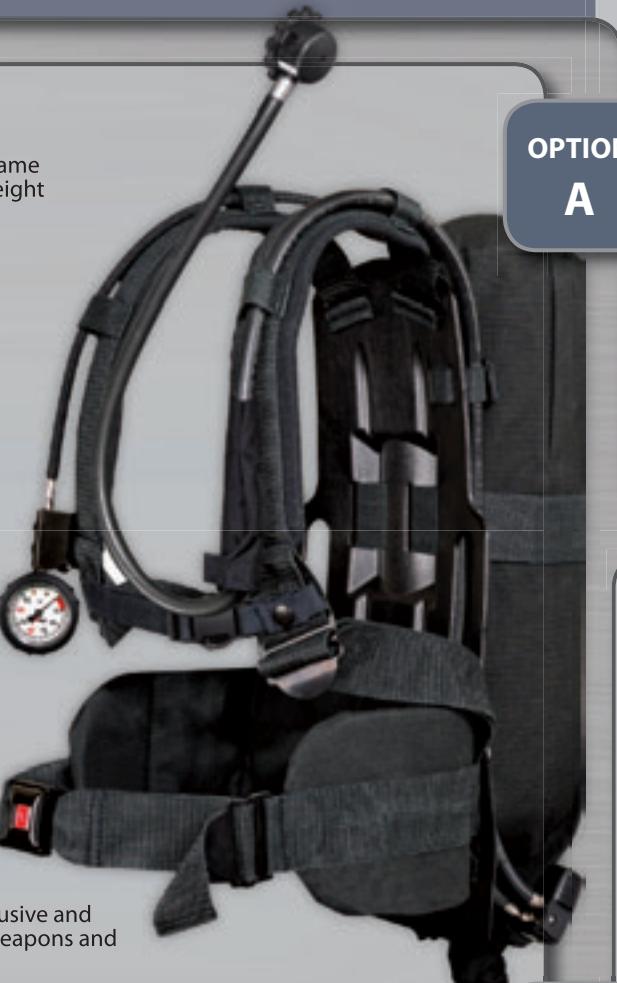
The ST53 backframe option includes a remotely accessible, chest mounted pressure gauge for monitoring of pressure and a whistle for end of service alarm which has the option to be disabled if required.

Compact Demand Valve (CDV)

The world's smallest, most compact chemically hardened demand valve provides constant positive pressure.

With the option to mount on either side of the mask, it is unobtrusive and allows excellent integration with weapons and other personal equipment.

The CDV is attached to the mask via the standard 40mm thread connection.



OPTION C

Cylinder Options	Free air volume	Approximate duration
2216 psi, carbon wrapped	45 cu. ft.	30 minutes
4500 psi, carbon wrapped	45 cu. ft.	30 minutes
4500 psi, carbon wrapped	45 cu. ft.	45 minutes
4500 psi, carbon wrapped	45 cu. ft.	60 minutes +

Note: These are 'approximate' durations that are based on NIOSH breathing rates of 40 liters per minute.

The Multi-Role Respiratory Protection System



OPTION B

ST-PAPR™

The ST - PAPR is a modular system which can be attached within a few moments using quick connect air line couplings. The addition of the ST - PAPR provides the additional levels of serviceability and comfort associated with powered air whilst still retaining the ability to switch instantly to the positive pressure SCBA mode when required.

- The ST - PAPR has a remote on/off switch located on the mask hose connector enabling the ST - PAPR to be easily switched on and off.
- A speed selector provides a high flow rate up to 165 liters per minute with a minimum flow rate of 125 Liters per minute at the lowest setting.
- Lithium Sulphur Dioxide battery option with a minimum 7 hour battery life.
- Lithium Ion rechargeable battery option with a minimum 6 hour battery life.
- With the ST - PAPR the integrated CDV enables the user to switch instantly from powered air to positive pressure SCBA mode when required.
- Incorporates two 40mm standard NATO thread filters.



OPTION D

ACCESSORIES

FILTER OPTIONS

- The FM53 system includes a unique close fitting filter design, giving the user greater visibility and improved weapon sighting and ergonomics.
- The general purpose filter provides protection from a wide range of CBRN hazards.
- The lower inhalation resistance particulate filters can be used specifically for particulate challenges.
- Filter mounted left or right side – 40mm standard NATO connection.

OPTIONAL EXTRAS

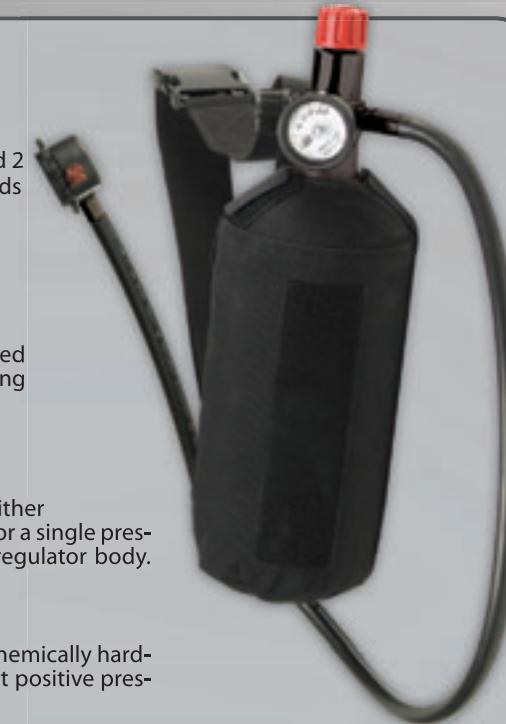
- Airline / decontamination attachments are available with the ST53™.
- Operator replaceable spare parts available, easy to maintain with access to key components.
- A wide range of fully compatible accessories such as hydration canteens, communication connections, vision correction system, clear and sunlight outserts and a range of storage and carry bags.
- Rapid Intervention Coupling (RIC); allowing a rescue team to attach a rescue cylinder to the SCBA.

COMMUNICATION

- For enhanced voice amplification, an optional Voice Projection Unit (VPU) with internal microphone can be connected via the Electronic Communication Port (ECP).
- Additional external communication systems can be attached via the ECP using an appropriate lead.

ST53SD™

The short duration variant provides a belt or harness carry option with 1 and 2 liter cylinder options meeting the needs of law enforcement and special forces for short-term tactical operations.



OPTION B

The ST53SD includes a nickel-plated brass cylinder valve in the non-locking configuration.

Cylinder Content Monitoring

The ST53SD provides the option of either a remote whistle and pressure gauge or a single pressure gauge attached directly to the regulator body.

Compact Demand Valve (CDV)

The world's smallest, most compact chemically hardened demand valve provides constant positive pressure.

With the option to mount on either side of the mask, it is unobtrusive and allows excellent integration with weapons and other personal equipment.

The CDV is attached to the mask via the standard 40mm thread connection. Can be fitted with ST PAPR in back mounted configuration.

Cylinder Options	Free air volume	Approximate duration
11 cu. ft. carbon wrapped, 4500 psi	11 cu. ft	7 minutes
17 cu. ft. carbon wrapped, 4500 psi	17 cu.ft	12 minutes

Note: These are 'approximate' durations that are based on NIOSH breathing rates of 40 liters per minute.